



# City of Richmond

## Report to Committee

**To:** Public Work and Transportation Committee

**Date:** November 16, 2018

**From:** John Irving, P.Eng, MPA  
Director, Engineering

**File:** 10-6125-05-01/2018-  
Vol 01

**Re:** Street Lighting Conversion Plan Status Update

### Staff Recommendation

That the staff report titled "Street Lighting Conversion Plan Status Update" from the Director, Engineering dated November 16, 2018, be received for information.

John Irving, P.Eng, MPA  
Director, Engineering  
(604-276-4140)

Att.1

REPORT CONCURRENCE	
CONCURRENCE OF GENERAL MANAGER	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: 
APPROVED BY CAO	

## Staff Report

### Origin

The City's Street Lighting Conversion Plan ("Plan") activities and results described in this report support the following Council 2014-2018 Term Goals:

#### #4 Leadership in Sustainability:

*Continue advancement of the City's sustainability framework and initiatives to improve the short and long term livability of our City, and that maintain Richmond's position as a leader in sustainable programs, practices and innovations.*

4.1 *Continued implementation of the Sustainability Framework.*

4.2 *Innovative projects and initiatives to advance sustainability.*

#### #5 Partnerships and Collaboration:

*Continue development and utilization of collaborative approaches and partnerships with intergovernmental and other agencies to help meet the needs of the Richmond community.*

5.1 *Advancement of City priorities through strong intergovernmental relationships.*

5.2 *Strengthened strategic partnerships that help advance City priorities*

#### #6 Quality Infrastructure Networks:

*Continue diligence towards the development of infrastructure networks that are safe, sustainable, and address the challenges associated with aging systems, population growth, and environmental impact.*

6.1 *Safe and sustainable infrastructure.*

### Background

Council approved Phase 1 of the City's Street Lighting Conversion Plan in 2016 and Phase 2 of the Plan in 2017. Phase 3 of the Plan is being brought forward for Council consideration through the 2019 capital budget process, and Phase 4 is planned for capital budget consideration in 2020.

The City of Richmond owns and maintains over 12,000 street lights. The annual electricity cost for those lights is approximately \$840,000, based on the consumption of over 7.3 million kWh (representing approximately 15% of the corporate total). The majority of the City's street lights use conventional High Pressure Sodium (HPS) or metal halide (MH) technology. Significant improvements in light emitting diode (LED) technology over the last ten years has made them the more cost effective and sustainable choice for the replacement of fixtures that are at their end of life.

The original Plan involved the replacement of HPS and/or MH street light fixtures that were over 26 years old, with LED fixtures. The Plan was divided into four phases to be implemented over four separate years. This scheduling helped to spread out the required capital funding across multiple years, and ensured that the City took advantage of the continued improvements that are being made with the LED technology. At the time it was estimated that the costs to complete the entire Plan was \$950,000 for materials and \$550,000 for labour, for a total of \$1.50 million. Once

completed it was estimated that this Plan would realize an electricity savings of over 650,000 kWh (or 9% of the total street lighting demand), which would avoid approximately \$86,000 in annual electricity costs while replacing streetlights that were nearing or at their end of life.

## **Analysis**

### Phase 1

Phase 1 of this project consisted of replacing aged fixtures in the West Richmond area. After a detailed review of the quarter sections in the area, almost 1,200 street lights were included as part of Phase 1. As a result of achieving some cost efficiencies and utilizing in-house electricians to complete the work, the City was able to complete the expanded Phase 1 work within the original capital budget of \$375,000.

### Phase 2

Phase 2 of this project consisted of replacing aged fixtures in the Southwest Richmond area. The area included numerous roadways that are classified as part of the regional Major Road Network (MRN), for which the City receives some annual funding from the Province to support maintenance activities and replacements. The City was able to leverage over \$60,000 in funding from this source. In addition, the City received an incentive payment from BC Hydro of over \$40,000 for its Phase 1 work, which was used to support the Phase 2 work. The additional funding and the use of in-house electricians allowed the City to replace over 1,600 less efficient fixtures with LED fixtures, without exceeding the original Phase 2 capital budget of \$380,000.

### Phase 3 and Phase 4

Phase 3 and 4 are subject to future capital funding decisions. For Phase 3 it is planned that approximately 1,350 fixtures in the City Centre will be replaced.

Once Phase 3 has been completed, Phase 4 of the Plan will be brought forward for consideration. It is expected that Phase 4 of the project would include the replacement of another 1,000 to 1,500 street light fixtures in the Central and East Richmond areas that are aged and due for replacement.

Once all four Phases of this Plan have been completed the City will have replaced over 45% of the City's current street light fixture inventory to higher efficient LED technology, doubling the expected electricity savings of the overall Plan and exceeding the commitment to the community, while not exceeding the original budgeted cost to the City.

Through the City's Sustainability in Action video series and other means, Phase 1 of this project has been highlighted as a best practice example to Richmond residents and stakeholders. With support of the City's Communication's Department, a communication plan will be developed and implemented once future project phases have been completed.

### **Financial Impact**

None.

### **Conclusion**

The City strives to be the most appealing, livable, and well-managed community in Canada. One of the keys for the City to be the most well-managed municipality entails consistently renewing and replacing existing infrastructure as needed with infrastructure that improves performance and provides best value to the City. The replacement of street lighting fixtures in the West Richmond area through the completion of Phase 1 and 2 of this conversion plan aligns well with this vision.

With Council support of initial phases of this Plan, the City was able to leverage its investments in renewing its street lighting infrastructure to expand the size and scope of the first two phases. With the completion of the planned remaining two phases the City expects to replace and upgrade over 45% of its street lighting infrastructure, and help to reduce the associated electricity consumption within the original estimated budget.



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Corporate Energy Manager  
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Att. 1 City of Richmond Project Comparison Photos

Before and after comparison – Coventry Drive

